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TITLE: METHOD OF MOLDING FOAMED BODY WITH INTEGRAL SKIN

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ABSTRACT:

PURPOSE: To obtain a foamed body with an integral skin whose feeling is favorable and whose adhesion to the foamed body is good, by flocking a thermoplastic resin thin layer surface to obtain a flocked skin, introducing the flocked skin in a mold, injecting a foamable resin raw liquid onto the undersurface of the skin, and allowing the liquid to foam and the thin layer to fuse.

CONSTITUTION: For example, the surface of the thin layer 12 of a thermoplastic synthetic resin is flocked with a flock material 13 to obtain the flocked skin 11, and the skin 11 is placed in the bottom force 15 of the mold 14 with the flock material 13 down, and vacuum is applied by a vacuum pump 17 to suck the skin 11 to the molding surface of the bottom force 15 to perform the molding. Then the foamable synthetic resin raw liquid is injected onto the thin layer 12 of the skin 11, a top force 16 is set, and then the resin

liquid is allowed to  
foam and the thin layer 12 is fused to obtain the intended  
foamed body having  
the foamed body 18 and the skin 11 integrally fused to it.  
This method is  
suitable to the production of sheets for cars, furniture,  
etc.

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## ⑫ 公開特許公報 (A)

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## ⑮ 表皮一体発泡体の成形方法

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## 明 細 書

## 1. 発明の名称

表皮一体発泡体の成形方法

## 2. 特許請求の範囲

(1) 熱可塑性合成樹脂からなる薄層の表面側に植毛材を植毛して表皮を形成し、該表皮を所定の形状に成形した後、発泡成形型において前記表皮の裏面側に発泡合成樹脂の原液を注入し、該原液を発泡させて発泡体を発泡成形し、前記発泡成形の際に表皮の薄層を溶着して前記表皮と発泡体とを一体に成形する事の特徴とする表皮一体発泡体の成形方法。

(2) 前記表皮の成形が真空成形型により行なわれる事の特徴とする特許請求の範囲第1項記載の表皮一体発泡体の成形方法。

## 3. 発明の詳細な説明

本発明は車両等のシートまたは家具等のシートに用いられる表皮一体発泡体の成形方法に関する。

従来の表皮一体発泡体は第1図に示す如く、布製の表皮1の裏面側に裏打材2を取り付け、この

裏打材2の裏面側に発泡合成樹脂を発泡成形して発泡体3を形成しており、布製の表皮1を用いる場合には繊維の伸縮性が悪いので成形性が悪く、表皮1の裏面側に塩化ビニルシートやゴム材等の裏打材2を固着しなければ表皮1の裏面側に注入される発泡合成樹脂の原液が含浸し、表皮1を固化させる虞れを有し、また通気性を有する表皮1を真空成形法により成形する事が出来ない欠点を有し、また裏打材2を使用する事により表皮1の厚みが増大し、表面感触を悪化させる欠点を有し、更に裏打材2に塩化ビニルシートを用いる場合には発泡体との接着性が不良となる欠点を有していた。

本発明の目的は、表皮に平織、丸織等の繊維からなる布地を使用することなく、表面感触が布製と同様に優れ、且つ伸縮性が良いので成形性に優れ、また表皮の真空成形に際し、裏打材を用いる必要がなく、表皮の感触風合が優れ、表皮と発泡体との接着性の優れた経済性に富む表皮一体発泡体の成形方法を提供するもので、以下図面を参照

して詳述する所より明らかとなるであろう。

第2図には本発明に係る表皮一体発泡体の成形方法の実施に用いられる表皮11の一実施例が示されており、この表皮11はオレフィンシートのように熱可塑性合成樹脂からなる薄層12と、この薄層12の表面側に静電植毛された植毛材13とからなり、植毛材13は表皮11が平らな状態において植毛されるので、植毛が容易であると共に植毛後にモミ加工や薬液処理等により薄層12に強固に植毛させられる。

次に第3図乃至第6図に基づき本発明方法の一実施例を説明すると、第3図には前記表皮11が真空成形法により成形されている状態が示されており、成形型14の下型15に表皮11の植毛材13を下方に向けて状態で設置し、ついで真空ポンプ17を作動させて真空引きし、下型15の成形面に表皮11を吸着させる。

次に、第4図に示す如く、表皮11の薄層12側に発泡合成樹脂の原液18'を注入し、第5図に示す如く上型16をセットし、常法により発泡成

形し、発泡体18を発泡成形する。この発泡体18の発泡成形の際に発生する発泡熱及びキュア熱により前記表皮11の薄層12が溶融され、薄層12と発泡体18とは溶着状態となり、成形型14の冷却後成形型14より表皮一体発泡体19を取り出し、第6図に示す如く、フレーム21に表皮一体発泡体19を組み付ける事によりシート22が形成される。

尚、成形型14の上型16に発泡合成樹脂の原液18'の注入孔が形成されたものを用いれば、上型16をセットした後に該注入孔より発泡合成樹脂の原液18'を注入し、発泡体18を発泡成形すればよい。

尚、更に発泡体18の発泡終了後にキュア炉内を通す事により、或いは適宜の加熱手段により表皮11の薄層12を更に溶融させ、第7図に示す如く、発泡体18表面或いは内部に薄層12の一部を溶け込ませ、表皮11に通気性を持たせるようにする事も出来る。

以上が本発明に係る表皮一体発泡体の成形方法

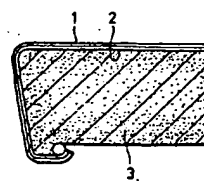
の一実施例の概略であるが、表皮の表面に植毛材が形成され、布製の表皮と同様の感触を得る事が出来、また植毛材は熱可塑性合成樹脂からなる薄層に植毛されているので成形性に優れ、また裏打ち材を使用しなくても真空成形が出来、表皮の厚さを減少させる事が出来るので表面感触が優れ、表皮の薄層を低温で溶融させる事により、極めて容易に通気性を持たせる事が出来る等種々の効果を有する。

#### 4. 図面の簡単な説明

第1図は従来の表皮一体発泡体の一例を示す断面図、第2図は本発明に係る表皮一体発泡体の成形方法の実施に用いられる表皮の一例を示す概略的断面図、第3図乃至第6図は本発明の成形工程の概略を夫々示す断面図、第7図は表皮一体発泡体の拡大断面図である。

図中、11…表皮、12…薄層、13…植毛材、14…成形型、15…下型、16…上型、17…真空ポンプ、18…発泡体、18'…発泡合成樹脂の原液、19…表皮一体発泡体、22…シート。

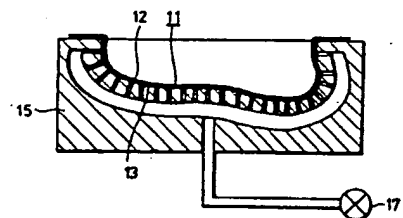
第1図



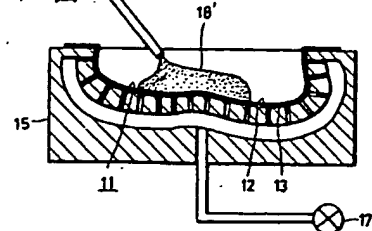
第2図



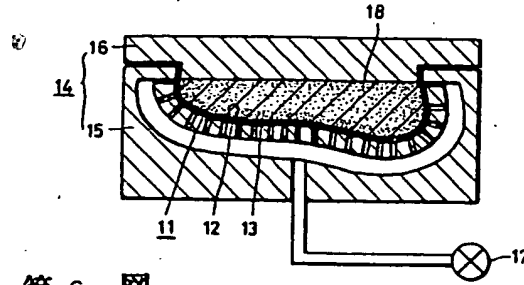
第3図



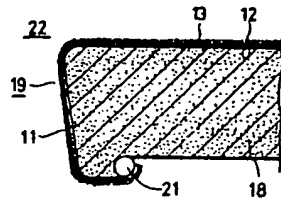
第4図



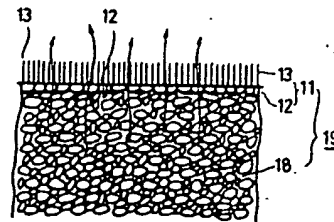
第 5 図



第 6 図



第 7 図



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**(54) METHOD OF MOLDING FOAMED BODY WITH INTEGRAL SKIN**

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**Specification**

**1. Title of the Invention**

**METHOD OF MOLDING FOAMED BODY WITH INTEGRAL SKIN**

**2. Claims**

(1) A method of molding a foamed body with integral skin, characterized in that skin is formed by flocking the top surface side of a thin layer made from a thermoplastic synthetic resin with a flocking material and molding this skin into a pre-determined shape; this skin is introduced to a mold for foam

molding; foaming synthetic resin solution is injected into the mold so that it is directed to the back surface side of this skin; and a foam-molded body is obtained by allowing this solution to foam, with the thin layer of skin fusing with the foamed body during this foam molding so that they are molded into one unit.

(2) The method of molding a foamed body with integral skin according to claim 1, characterized in that this skin is molded by vacuum molding.

### 3. Detailed Description of the Invention

The present invention relates to a method of molding a foamed body with integral skin used in sheets for vehicles, furniture, and the like.

A conventional foamed body with integral skin is made by affixing lining material 2 to the back surface side of skin 1 made of cloth and foam molding a foam molding resin to the back surface side of this lining material 2 to form foamed body 3, as shown in Figure 1. When skin 1 made of cloth is used, moldability is poor because fiber stretchability is poor. There is also a chance that the foaming synthetic resin solution that is introduced to the back surface side of skin 1 will impregnate the skin 1 and harden skin 1 unless lining material 2, such as a vinyl chloride sheet or rubber, is anchored to back surface side of skin 1. Moreover, there is a problem in that skin 1 with air permeability cannot be vacuum molded. In addition, the use of lining material 2 has a disadvantage in that it increases thickness of skin 1 and makes the surface less comfortable. The use of a vinyl chloride sheet for lining material 2 poses another problem in that adhesion with the foamed body is poor.

The purpose of the present invention is to provide a very economic method of molding a foamed body with integral skin that has the same excellent surface comfort as one made of cloth without using cloth made from fibers, such as plain woven or twill woven cloth, for the skin; has good stretchability and therefore excellent moldability; and with which a lining material is not necessary for vacuum molding of the skin and therefore, surface comfort of the skin is excellent and adhesion between the skin and foamed body is excellent. The present invention will now be described while referring to the drawings that follow.

An example of skin 11 that is used for the method of molding a foamed body with integral skin of the present invention is shown in Figure 2. This skin 11 comprises thin layer 12 made from a thermoplastic synthetic resin, such as an olefin sheet, and flocking material 13 that has been electrostatically flocked in the

top surface side of this thin layer 12. Flocking material 13 is flocked with skin 11 in a flat state and therefore, the flocked state is good and flocking can be firmly anchored to thin layer 12 by performing brushing treatment, chemical treatment, and the like after flocking.

Next, when an example of the method of the present invention is described based on Figures 3 through 6, Figure 3 shows the state where above-mentioned skin 11 is molded by vacuum molding. Skin 11 is placed in bottom form 15 of mold 14 so that flocking material 13 faces down and then vacuum pump 17 is turned on and that skin 11 is suctioned and adsorbed onto the molding face of bottom form 15.

Next, as shown in Figure 4, foaming synthetic resin solution 18' is injected onto the thin layer 12 side of skin 11, top form 16 is positioned as shown in Figure 5, and foam molding is performed by conventional methods to foam mold foamed body 18. Thin layer 12 of above-mentioned skin 11 is melted by the heat of foaming and the heat of curing that are generated by foam molding of this foamed body 18 so that thin layer 12 and foamed body 18 fuse together. Once mold 14 has been cooled, foamed body 19 with integral skin is removed from mold 14. As shown in Figure 6, sheet 22 is formed by introducing foamed body 19 with integral skin to frame 21.

It should be noted that if a mold in which holes for injection of foaming synthetic resin solution 18' have been made in top form 16 of mold 14 is used, foamed body 18 can be foam molded by injecting foaming synthetic resin solution 18 through these holes after top form 16 has been positioned.

Once foamed body 18 has been molded, thin layer 12 of skin 11 can be further melted by being passed through a curing oven or by an appropriate heating means so that part of thin layer 12 melts to the surface of foamed body 18, or into the foamed body, providing skin 11 with air permeability.

The above-mentioned is a schematic example of the method of molding a foamed body with integral skin relating to the present invention. However, the present invention does have various effects in that flocking material is formed in the surface of the skin so that it is possible to obtain the same comfort as skin made of cloth; the flocking material is flocked into a thin layer made of a thermoplastic synthetic resin and therefore, moldability is excellent; a lining material is not used and thus, vacuum molding can be performed and thickness of the skin can be reduced so that surface comfort is excellent; and the skin can be provided with air permeability very easily by melting the thin layer at a low temperature.



#### 4. Detailed Description of the Drawings

Figure 1 is a cross section showing an example of a conventional foamed body with integral skin, Figure 2 is a schematic cross section showing an example of skin used to perform the method of molding a foamed body with integral skin of the present invention, Figures 3 through 6 are cross sections showing schematic representations of the molding steps of the present invention, and Figure 7 is an enlarged cross section of the foamed body with integral skin.

In the figures, 11 is the skin, 12 is the thin film, 13 is flocking material, 14 is the mold, 15 is the bottom form, 16 is the top form, 17 is the vacuum pump, 18 is the foamed body, 18' is the foaming synthetic resin solution, 19 is the foam body with integral skin, and 22 is the sheet.